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#### **IV. EVALUATING USER SERVICE CHARGE SYSTEMS FOR WASTEWATER**

- A. EVALUATING REVENUES**
- B. EVALUATING EXPENSES**
- C. A STEP-BY-STEP EVALUATION PROCESS**
- D. USER SERVICE CHARGE WORKSHEETS**
- E. REPORT ON FINDINGS**

*Tell the topics that will be covered in this session.*

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#### IV.A.           EVALUATING REVENUES

- *Let's review. Our main objective here is to make sure water and wastewater utilities are financially self-sufficient.*
- *For that to occur, revenues generated by the operation must at least equal expenses.*
- *We've just defined and discussed the revenue components of a utility operation.*
- *Use overhead # 26*
- *Again, they are:*
- \*     **User Service Charge - the largest component**
- \*     **Hookup/Impact Fees**
- \*     **Taxes and Assessments**
- \*     **Interest Earnings**
- \*     **Other**

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#### **IV.B. EVALUATING EXPENSES**

- *Likewise, we've defined and discussed these expense components*
- *Use overhead # 27*
- *They are:*
  - \* **Salaries and Benefits - the largest component**
  - \* **Utilities**
  - \* **Chemicals**
  - \* **Equipment Replacement Costs**
  - \* **Administrative**
  - \* **Other Expenses**
- *Operating expenses do not include capital expenditures and depreciation.*

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#### **IV.C.            A STEP-BY-STEP EVALUATION PROCESS**

- 1.     Understand Why the Evaluation of the Community's User Service Charge System is Important**
  
- 2.     Recognize the Components of the User Service Charge System**
  
- 3.     Prepare for Appointment with Financial Management Staff**
  
- 4.     Accomplishments of the Review**
  
- 5.     Clearly Understand the Problems**
  
- 6.     The Report**
  
- 7.     Follow-up on the Report**

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#### IV.C. A STEP-BY-STEP EVALUATION PROCESS

##### 1. Understand Why the Evaluation of the Community's User Service Charge System is Important

- *Now we will apply our knowledge of financial management and user charges. We will evaluate the user charge components of a utility's financial management system. This is the major revenue generating system for the utility.*
- *To do this, clearly defined goals you want the evaluation to accomplish. Two major goals would be - Is enough money coming in to pay for expenses? Do user rates need to be adjusted?*
- *Primarily you want to check the financial health of the system. To do this, you will need to use the ratios and checklists previously discussed as well as other financial documents.*
- *List ratios, financial health checks and documents you'll need to see.*
- *Your purpose is to determine whether the operation is financially sound. You must probe, gather information and become very familiar with the operation to determine this. You will need to research the audit reports, budgets and other financial statements of the utility, the debt service schedules, the rate schedule, management policies and ordinances, talk to the staff and visit the facilities.*
- *You will need to size up what's right and what needs improving in this operation. Try to be objective. Look at the operation like an outsider would.*
- *It's wiser to do a self-evaluation and make your own adjustments rather than be in a position of having to react to a state or federal evaluation.*

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## 2. Recognize the Components of the User Service Charge System

- *Before beginning a user service charge system self-evaluation, you will have to learn the language of user charges. The previous discussion defined the major terms.*
- *Use Overhead # 28*
- *Think of the components as comprising a puzzle. Revenue pieces of the puzzle balance the expense pieces in such a way that the system operates in a positive cash flow. The object of water and wastewater enterprise fund operations is neither to incur profit or loss. These operations provide a public service.*
- *Besides learning the significance of terms like interest earnings and equipment replacement costs, you should understand how personnel turnover rate, surcharges, pretreatment ordinances and other factors influence the operations' financial management. We'll discuss these as we work through a case study in the next session.*
- *As part of their job duties, federal or state officials may do compliance evaluations, particularly if federal or state grants or loans were used to build facilities. We recommend you follow these steps in a self-evaluation as well.*

## 3. Prepare for Appointment with Financial Management Staff

- *State and federal staff will set an appointment with the staff most familiar with the financial operation. It could be the water or wastewater utility manager or the community's finance director or comptroller. You will want to do the same for a self-evaluation.*

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- *Use Overhead # 29*
- *Make a list of records to review during the appointment. For instance, you will need the most recent audit report, the current budget, current year-to-date revenues, current year-to-date expenses, the water/wastewater rate schedule, the sewer use ordinance, debt service schedules and contracts with other utilities. Allow sufficient time to prepare for the appointment.*
- *Ask your staff to have these records available. Allow them sufficient time to gather information. You will want to tour plant facilities, too.*
- *Set aside 2-4 hours for the entire appointment.*
- *The state or federal staff will probably follow-up with a letter stating the purpose of the upcoming visit and listing the documents they will need. They will send copies of their worksheets. We recommend you use the same worksheets for your self-evaluation.*
- *Use Overhead # 30*
- *Remind staff of the appointment one day before.*

#### 4. Decide on Accomplishments of the Review

- *Whether you or the state conducts the evaluation, the purpose is to determine whether the operation is financially sound. In order to do that, you'll have to probe and gather specific clues to reach a conclusion.*

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- *Know ahead of time what information to gather.*
- *The clues will be in writing - in financial statements, in management policies and in ordinances. Clues will also be visible in other ways - the cleanliness and state of repair of the treatment facility; the attitude and professionalism (or lack of it) of staff.*
- *A checklist is invaluable! We'll use one in the case study coming next.*

## 5. Clearly Understand The Problems

- *During the evaluation, don't be shy about asking probing questions; be sure you have a clear understanding of financial records and other documents.*
- *Be direct in pointing out the problems you see.*
- *Tell the staff what will be in your evaluation report. People do not like UNPLEASANT surprises.*

## 6. The Report

- *Use the checklists and worksheets you developed during the evaluation; information gained during conversations with staff; and what you observed at the treatment facility to develop a comprehensive report.*

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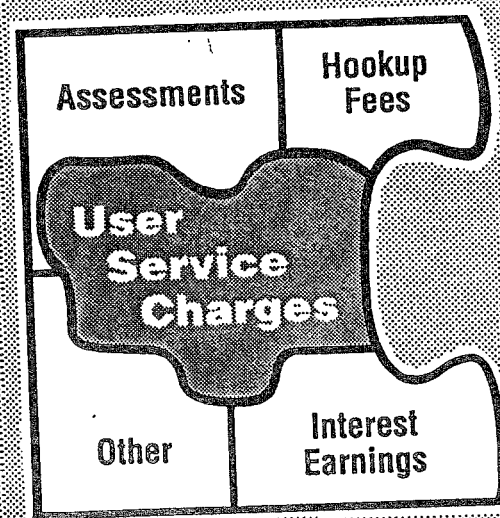
## 7. Follow-up on the Report

- *Follow-up on the requirements and recommendations in a self-evaluation report and ones received from the state. Don't drop the ball. Keep on top of the problem.*
- *Communities, like individuals, resist change. If your community doesn't make needed changes, enforcement action may be necessary to force better financial management.*

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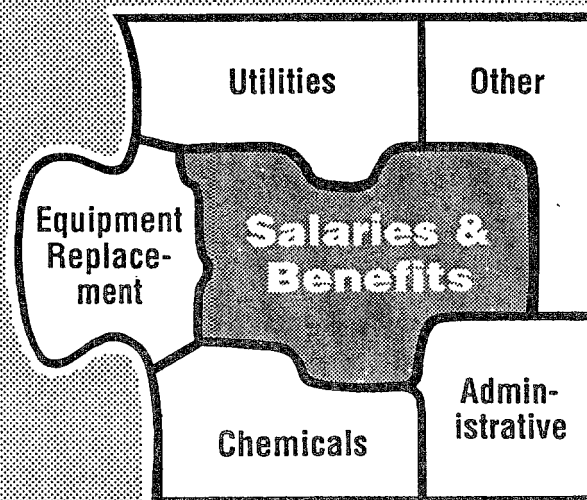
## ***Revenues...***

**...are all monies received for wastewater operations. Get these figures from management, budgets and financial statements.**

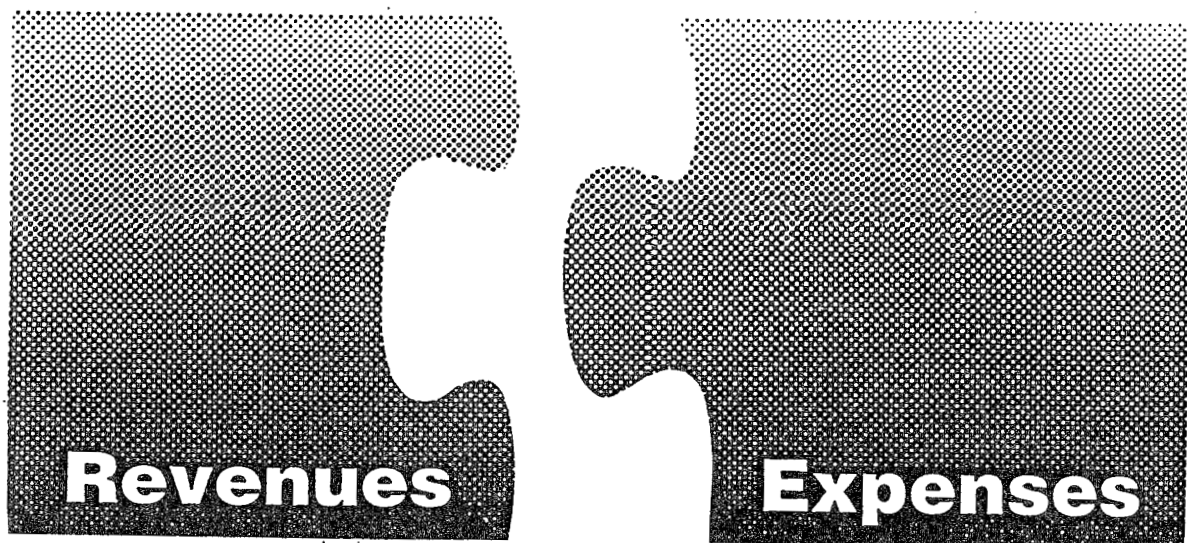


## ***Expenses...***

**...are the costs of operating, maintaining, replacing equipment and paying debt service for a wastewater system.**



## The Big Picture



# **LIST THE DOCUMENTS YOU'LL NEED:**

Most recent audit

Current budget

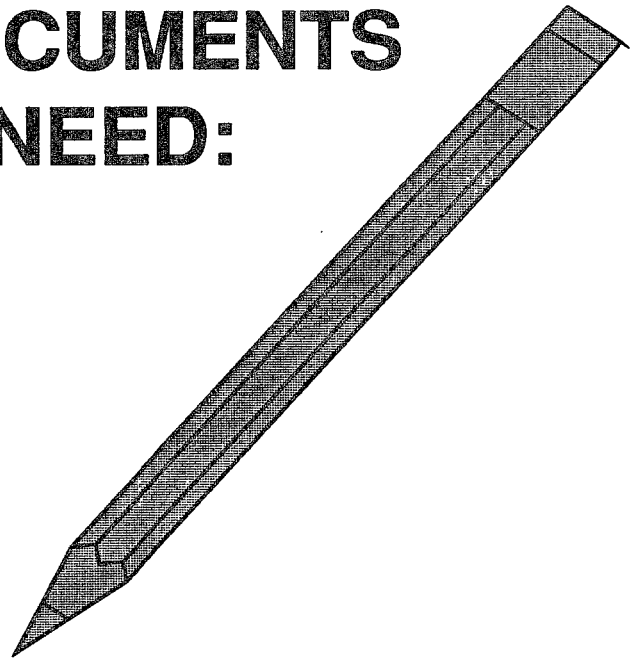
Current year-to-date revenues and expenses

Rate schedule

Sewer use ordinance

Contracts with other utilities

Debt service schedules



## **SAMPLE LETTER**

**Initial letter to schedule an appointment for a user charge evaluation**

**(Date)**

**Mr. James Sullivan  
Finance Director  
City of Anytown  
100 S. Main St.  
Anytown, USA**

**Dear Mr. Sullivan:**

**This letter confirms our appointment for (time), (month) (date), (year), and lets you know what information I will need to obtain during our meeting.**

**As we discussed on the telephone today, I will be evaluating Anytown's wastewater user service charge system. I need to determine if it is generating sufficient revenues to cover operation, maintenance, equipment replacement and debt service costs. The evaluation will consist of (1) a meeting with you and your staff to discuss the utility's financial operations and (2) a brief tour of the wastewater facilities. These activities should take about four hours to complete.**

**FIGURE 30**

**I have enclosed a User Service Charge Worksheet I will use at the meeting. Please complete as much of this worksheet as you can before our meeting and be prepared to respond to the questions. I will also need to review the following information on your wastewater operation:**

- the most recent audited financial statement,**
- the current budget,**
- current year-to-date revenues,**
- current year-to-date expenses,**
- the wastewater rate schedule and ordinance (or resolution), and**
- the sewer use and pretreatment ordinances.**

**Please call me at (number) with any questions you may have prior to our meeting.**

**Sincerely,**

**Anne Taylor  
Utility Board Manager**

**enclosure**

**FIGURE 30A**

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#### **IV.D.            USER SERVICE CHARGE WORKSHEETS**

- \*        Management/Operating Policies/Compliance**

**Worksheet 1**

- \*        Financial Information**

**Worksheets 2-4**

- \*        User Service Charge System**

**Worksheets 5-6**

- \*        Wastewater Facility Tour**

**Worksheet 7**

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#### IV.D. USER SERVICE CHARGE WORKSHEETS

##### \* Management/Operating Policies/Compliance

##### Worksheet 1

- *Use Overhead # 31*
- *Enforcement Activity*
- *City officials need to be familiar with the compliance status of the utility operation. Talk to managers and superintendents and check correspondence files to determine if the utility has any outstanding permit violations or compliance problems. If violations have occurred within the last 12 months, find out what they were. Are they recurring? How were they solved? Find out when the last regulatory inspection was performed and the outcome.*
- *Talk with your staff. Discuss any violations of the NPDES permit or any drinking water violations within the last 12 months. Find out the nature of the violations. Were they recurring? Have they been solved? How serious were the violations? Have fines been levied?*
- *Did insufficient operating revenues contribute to the violations? Beware! Permit violations are an earmark of poor management.*

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- Accounting Reports

- Find out whether the utility receives monthly accounting wastewater revenues and expenses. Look at them. (Place monthly accounting report in the back of the room for all to see at during breaks.)

- Written Policies and Procedures

- Find out whether the utility has a sewer use or pretreatment written policies and procedures for collecting delinquent cut-off, meter testing, line extensions and so forth. Agree to find out how long since they were updated.

- Organizational Structure

- Look at the system's organizational structure. Is there authority and responsibility?
- Think of the problem situations like these present: (1) A manager is responsible for keeping enough chemicals on hand to run the facility, but he does not have the authority to originate those chemicals; (2) A manager is responsible for operating the facility, but the manager does not have authority to conduct evaluations or decide on disciplinary actions and merit increases for employees.

- Management Climate

- What kind of work environment does management foster? Are people generally satisfied? Does management delegate? Who? Do people like working here? Why? Why not? Be open.

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**\* Financial Information**

**Worksheets 2-4**

- *First, look for separate budgets for revenues and expenses. The budget should show separate line items. Of course the water and wastewater budgets should be separate from other governmental utility budgets like garbage disposal.*
- *Use overhead # 32*
- *What are the total annual budgeted REVENUES for the wastewater operation?*
- *What are the total annual budgeted EXPENSES for the wastewater operation?*
- *Use overhead # 33*
- *Next, what are the actual revenues to date?*
- *How do they compare with budgeted revenues to date? You will need the latest revenues report for this comparison.*
- *What are actual expenses to date? How do they compare with budgeted expenses? You will need the latest expense report for this comparison.*
- *Simply subtract total operating expenses from total revenues to determine if the utility operation has a cash flow problem.*
- *Does the utility have a plan (or reserves) to cover a revenue deficit?*
- *Use overhead # 34*
- *The utility should review user service charges annually and adjust them to reflect expenses. Do they?*
- *An equipment replacement fund is very important. Does your utility have a line item in your budget for this expense?*

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- *What percentage of OM&R funds are set aside for equipment replacement?*
- *ERF (%) = ERF Costs/(Total Operating Expenses) - (P&I Payments) X 100%*
- *Finally, does a certified public accounting firm review the utility accounts?*

\* **User Service Charge System**

**Worksheets 5-6**

- *Take a close look at the rate schedule, sewer use ordinance and policy manual.*
- *Use Overhead # 35*
- *Does the rate schedule specify a minimum charge? The minimum charge should cover billing costs only (cost of preparing and mailing the bill).*
- *Does the rate schedule specify a uniform rate based on volume of usage?*
- *Overhead # 36*
- *Are the costs of collection and treatment shared proportionally by each user group?*
- *Are users notified annually of the rates? How?*
- *Find out how the costs for treating I/I are covered. Are they distributed proportionally to each user group?*
- *Compute the treatment rate cost.*
- *How does the utility determine usage? Water meters? Other?*

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- *Overhead # 37*
- *Does the Sewer Use Ordinance and rate schedule provide for surcharges?*
- *How does the utility determine surcharges? Based on what measurement?*
- *What does a typical customer in this community pay per month?*
- *Find whether the bills are separated by service. Is the water bill separated from the wastewater? the garbage pick-up?*
- *Are there contractual agreements between the treating utility and other political jurisdictions served by the utility? For example: do users outside the utility's political boundary pay the same rate as inside users? Do those outside jurisdictions have proportional rate schedules?*
- *The above questions are being asked of our case study community. (In response to the questions, discuss possible answers. Encourage participation from the audience and fill in the worksheet pages as the questions are discussed.)*

\* **Wastewater Facility Tour**

**Worksheet 7**

- *Use Overhead # 38 to show Worksheet 7*
- *Tour the treatment facility, starting at the head of the plant.*
- *As you walk through, notice the state of repair, maintenance, and cleanliness. Is the concrete cracking? Do handrails need painting? Are pumps leaking? Is the chemical feed area neat? Is the fan working in the chlorine feed room? How are the treatment processes performing? Are the operators knowledgeable of the treatment processes?*

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- *Is the laboratory clean and organized?*
- *Is the facility adequately staffed?*
- *Are the operators certified? Do they receive training periodically?*
- *Summary*
- *At the end of the evaluation, (whether this is a self-evaluation or a regulatory evaluation), summarize.*
  - (a) *List the findings*
  - (b) *Outline an action plan for solving problems*
  - (c) *Follow-up*
  - (d) *Communicate*

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Utility/Community Name: \_\_\_\_\_

Name of Local Contact: \_\_\_\_\_

Telephone Number: (\_\_\_\_\_) \_\_\_\_\_ Date \_\_\_\_\_

# User Service Charge Worksheet

## Management/Operating Policies/Compliance

1. Describe any NPDES permit violation(s) which occurred within the last 12 months and the reason(s) for the violation(s).

2. Did insufficient operating revenues contribute to the NPDES violation(s)?

Yes ☐No ☐

3. Does the utility receive monthly accounting reports for wastewater revenues and expenses?

Yes ☐No ☐

4. Does the utility have a pretreatment ordinance?

Yes ☐No ☐

5. Does the organizational structure of the wastewater utility present any operational problems?

Yes ☐No ☐

6. What is the annual personnel turnover rate?

7. Are the procedures for collecting delinquent wastewater bills adequate?

Yes ☐No ☐

## Financial Information

1. Does the wastewater budget show revenues and expenses by line item? (Note: The wastewater budget should be separate from other governmental utility budgets like water, garbage disposal, etc.)

Yes

No

2. What are the total annual budgeted revenues for the wastewater operation?

### TOTAL BUDGETED REVENUES

	\$
User service charges	
Hookup/impact fees	
Taxes/assessments	
Interest earnings	
Other	
<i>Total Budgeted Revenues</i>	

3. What are the total annual budgeted expenses for the wastewater operation?

### TOTAL BUDGETED OPERATING EXPENSES

	\$
Salaries and benefits	
Utilities	
Equipment replacement fund	
Chemicals	
Supplies and parts	
Contract services	
Administration	
Principal and interest payments	
Other	
<i>Total Budgeted Operating Expenses</i>	



4. What are actual revenues to date? How do they compare with budgeted revenues to date?

BUDGETED REVENUES VS. ACTUAL		
	\$ Budgeted	\$ Actual
<i>Total Revenues</i>		

5. What are actual expenses to date? How do they compare with budgeted expenses to date?

BUDGETED EXPENSES VS. ACTUAL		
	\$ Budgeted	\$ Actual
<i>Total Operating Expenses</i>		

6. Does the wastewater utility show a cash flow problem?

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
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ACTUAL REVENUES & EXPENSES	
	\$
<i>Total Revenues</i>	
<i>Total Operating Expenses (-)</i>	
<i>Cash Available</i>	

7. How does the utility cover a revenue deficit?

**Worksheet-4**

8. Does the utility review user service charges and adjust them annually to reflect budgeted or actual expenses?

**Yes** ☐**No** ☐

9. Does the utility have an equipment replacement fund (ERF)?

**Yes** ☐**No** ☐

10. What percentage of operation, maintenance and equipment replacement funds are set aside for equipment replacement?

Equipment  
Replacement  
Fund  
(ERF) (%)

$$= \frac{\text{ERF Costs}}{(\text{Total Operating Expenses}) - (\text{P\&I Payments})} \times 100\%$$

ERF (%) =

11. Does a certified public accounting firm review the utility accounts?

**Yes** ☐**No** ☐

## User Service Charge System

1. Does the utility distribute the wastewater collection and treatment costs proportionally to each user, user class or political jurisdiction?

Yes ☐ No ☐

2. Does the utility use a sewer use ordinance that incorporates a proportionate wastewater rate schedule? (Attach a copy.)

Yes ☐ No ☐

3. Does the utility distribute the I/I costs proportionally to each user, user class or political jurisdiction?

Yes ☐ No ☐

4. Does the rate schedule specify a uniform rate for wastewater treatment based on the volume of usage?

Rate = \$  /1000 gal

Yes ☐ No ☐

5. Does the rate schedule provide for a minimum charge?

Yes ☐ No ☐

6. What is the minimum charge?

\$

7. Are customers notified annually of the wastewater rates?

Yes ☐ No ☐

8. What is the actual total operation, maintenance, equipment replacement and debt service costs per 1000 gallons of wastewater treated by the utility?

Treatment Rate = 
$$\frac{\text{OM\&R} + \text{Debt Service Costs}}{\text{Total Flow}} = \$ \text{  } /1000 \text{ gal}$$

**Worksheet-6**

9. How does the utility determine wastewater user fees? (Check one)

Water meter readings?

☐

Equivalent dwelling unit?

☐

Other? (Specify)

☐

\_\_\_\_\_

10. Does the rate schedule specify surcharges for high-strength wastes?

Yes

☐

No

☐

11. How does the utility determine surcharges?

12. What is the average annual wastewater bill for a typical residential user?

\$

13. Are users billed separately for wastewater services?

Yes

☐

No

☐

14. Do all political jurisdictions served by the utility have a sewer use ordinance which incorporates a proportional wastewater rate schedule?

Yes

☐

No

☐

15. Do users outside the utility's political boundary pay the same rate as inside users?

Yes

☐

No

☐

16. Do all serviced political jurisdictions meet the same user service charge system conditions as the wastewater treating utility? (If No, describe.)

Yes

☐

No

☐

**ORDINANCE NO.  
SEWER USE ORDINANCE**

**Section 1. General Provisions**

**1.1 Purpose and Policy**

**This Ordinance sets forth uniform requirements for the disposal of wastewater in the service area of the City of Anytown, USA wastewater treatment system. The objectives of this Ordinance are:**

- (a) To protect the public health;**
- (b) To provide problem free wastewater collection and treatment service;**
- (c) To prevent the introduction of pollutants into the municipal wastewater treatment system, which will interfere with the system operation, will cause the City's discharge to violate its National Pollutant Discharge Elimination System \*NPDES) permit or other applicable state requirements will cause physical damage to the wastewater treatment system facilities;**
- (d) To provide for full and equitable distribution of the cost of the wastewater treatment system;**
- (e) To enable the City to comply with the provisions of the Federal Clean Water Act, the General Pretreatment Regulations (40 CFR Part 403), and other applicable federal and state laws and regulations;**

**FIGURE 37**

## Wastewater Facility Tour

1. What is the current average flow treated at the facility (gallons per day)?	<div style="border: 1px solid black; width: 100px; height: 20px;"></div>	gpd
2. Does the facility appear to operate normally?	<div style="display: inline-block; width: 40px; text-align: center; background-color: black; color: white;">Yes</div> <div style="display: inline-block; width: 40px; text-align: center; background-color: #cccccc;"> </div> <div style="display: inline-block; width: 40px; text-align: center; background-color: black; color: white;">No</div> <div style="display: inline-block; width: 40px; text-align: center; background-color: #cccccc;"> </div>	
3. Is any equipment out of service? (Specify)	<div style="display: inline-block; width: 40px; text-align: center; background-color: black; color: white;">Yes</div> <div style="display: inline-block; width: 40px; text-align: center; background-color: #cccccc;"> </div> <div style="display: inline-block; width: 40px; text-align: center; background-color: black; color: white;">No</div> <div style="display: inline-block; width: 40px; text-align: center; background-color: #cccccc;"> </div>	
4. Does maintenance appear satisfactory?	<div style="display: inline-block; width: 40px; text-align: center; background-color: black; color: white;">Yes</div> <div style="display: inline-block; width: 40px; text-align: center; background-color: #cccccc;"> </div> <div style="display: inline-block; width: 40px; text-align: center; background-color: black; color: white;">No</div> <div style="display: inline-block; width: 40px; text-align: center; background-color: #cccccc;"> </div>	
5. Is good housekeeping evident?	<div style="display: inline-block; width: 40px; text-align: center; background-color: black; color: white;">Yes</div> <div style="display: inline-block; width: 40px; text-align: center; background-color: #cccccc;"> </div> <div style="display: inline-block; width: 40px; text-align: center; background-color: black; color: white;">No</div> <div style="display: inline-block; width: 40px; text-align: center; background-color: #cccccc;"> </div>	
6. Is the laboratory clean and well-organized?	<div style="display: inline-block; width: 40px; text-align: center; background-color: black; color: white;">Yes</div> <div style="display: inline-block; width: 40px; text-align: center; background-color: #cccccc;"> </div> <div style="display: inline-block; width: 40px; text-align: center; background-color: black; color: white;">No</div> <div style="display: inline-block; width: 40px; text-align: center; background-color: #cccccc;"> </div>	
7. Are adequate chemicals, supplies and parts on hand?	<div style="display: inline-block; width: 40px; text-align: center; background-color: black; color: white;">Yes</div> <div style="display: inline-block; width: 40px; text-align: center; background-color: #cccccc;"> </div> <div style="display: inline-block; width: 40px; text-align: center; background-color: black; color: white;">No</div> <div style="display: inline-block; width: 40px; text-align: center; background-color: #cccccc;"> </div>	
8. Is staffing adequate for the operation?	<div style="display: inline-block; width: 40px; text-align: center; background-color: black; color: white;">Yes</div> <div style="display: inline-block; width: 40px; text-align: center; background-color: #cccccc;"> </div> <div style="display: inline-block; width: 40px; text-align: center; background-color: black; color: white;">No</div> <div style="display: inline-block; width: 40px; text-align: center; background-color: #cccccc;"> </div>	
9. Are operators certified?	<div style="display: inline-block; width: 40px; text-align: center; background-color: black; color: white;">Yes</div> <div style="display: inline-block; width: 40px; text-align: center; background-color: #cccccc;"> </div> <div style="display: inline-block; width: 40px; text-align: center; background-color: black; color: white;">No</div> <div style="display: inline-block; width: 40px; text-align: center; background-color: #cccccc;"> </div>	
10. Does the staff receive formal training?	<div style="display: inline-block; width: 40px; text-align: center; background-color: black; color: white;">Yes</div> <div style="display: inline-block; width: 40px; text-align: center; background-color: #cccccc;"> </div> <div style="display: inline-block; width: 40px; text-align: center; background-color: black; color: white;">No</div> <div style="display: inline-block; width: 40px; text-align: center; background-color: #cccccc;"> </div>	
11. Do operational and compliance records appear adequate?	<div style="display: inline-block; width: 40px; text-align: center; background-color: black; color: white;">Yes</div> <div style="display: inline-block; width: 40px; text-align: center; background-color: #cccccc;"> </div> <div style="display: inline-block; width: 40px; text-align: center; background-color: black; color: white;">No</div> <div style="display: inline-block; width: 40px; text-align: center; background-color: #cccccc;"> </div>	
12. Note other comments or problems:		

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#### **IV.E. DRAFT A REPORT OF FINDINGS**

**Follow-up the evaluation by writing a report:**

- \* Cite Problems**
- \* Recommend Solutions**
- \* Establish Response Deadline**
- \* Follow-up**

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#### IV.E. DRAFT A REPORT OF FINDINGS

\* Cite Problems

- *Use Overhead # 39 (worksheet #1 filled in)*
- *Review the problems you noted during the evaluation:*
- *Worksheet 1*
- *The wastewater system has violated the NPDES permit's BOD limit for two consecutive months. You found during the plant tour that the cause of the violation appears to be an out-of-service sludge return pump. The budget did not specify funds to repair or replace the pump. A back-up pump has never been provided.*
- *Let's assume that the utility receives monthly accounting reports for its wastewater operation.*
- *The utility has a pretreatment ordinance, but the manager was not very familiar with it.*
- *Turnover rate is not a problem. They now employ a superintendent and two operators. The utility would have a serious problem if one of the existing staff left or became ill.*
- *The organizational structure presents a problem. The superintendent can't order routine supplies directly. He must wait for council approval. The council only meets one time each month.*
- *Collecting delinquent bills is a big problem. Water service is provided by another utility. The community depends on water usage figures supplied by the water utility to use in billing. The community has no legal means short of court action to collect delinquent bills. (The usual leverage is to deny water service, but in this case, the water utility will not co-operate.)*

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- Worksheets 2-4
- Use overhead # 40 (overhead # 32 filled in)
- Adding up all the revenues - user service charges, hookup/impact fees, taxes, assessments, interest earnings and other - the utility's total budgeted revenues are \$1,790,000.
- Use overhead # 41 (overhead # 33 filled in)
- To date, the total revenue, at the first quarter point in the fiscal year are \$424,000 or about 24%. Actual revenues are slightly below budgeted revenues for this point in the year.
- This indicates a potential problem. There could be a reason why revenues are not up to our original budget projections. Ask questions. Were meters read earlier than usual? Are some big users late in getting payments in?
- Do the same comparison with expenses.
- Use overhead # 40 again (overhead # 32 filled in)
- Add up the total budgeted operating expenses - salaries and benefits, utilities, equipment replacement fund, chemicals, supplies and parts, contract services, administration, principal and interest payments, and other. The total budgeted operating expenses are \$1,475,000.
- Use overhead # 41 again.
- The actual operating expenses are \$375,500 at the first quarter point of the fiscal year. Budgeted expenses at this point were \$368,750.
- We can see that the utility is over about \$6,800 on expenses and under by about \$23,500 on revenues. The utility is about \$30,000 below where it planned to be at this point in the year.
- Subtract total operating expenses from total revenues. We do not have a cash flow problem.
- The utility has a reserve fund to cover a revenue deficit. Remember the reserve ratio we discussed earlier?

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- *Don't count on this reserve keeping the utility out of trouble too long. Sooner, rather than later, a rate increase will be needed.*
- *Overhead #42 (overhead # 33 filled in)*
- *Yes. We found that the utility reviews its user service charges annually and makes necessary adjustments.*
- *From the budgeted expenses (refer to worksheet # 2); we found that \$200,000 was budgeted for equipment replacement.*
- *We can then calculate the ERF% as  $ERF \text{ costs} / (\text{total operating expenses} - P+I \text{ payments}) \times 100\%$ .  $\$200,000 / (\$1,475,000 - \$450,000) \times 100\% = 19.5\%$  (this is high).*
- *We found that a certified public accounting firm reviews the utility's accounts annually.*
- *Worksheets 5-6*
- *Overhead #43*
- *During conversations and examination of financial records, ordinances and procedures, we found that:*
- *Yes, costs are distributed proportionally to each user. No outside political jurisdictions are served.*
- *Yes, the sewer use ordinance incorporates a proportionate rate schedule.*
- *I/I costs are not billed to specific users, but are spread proportionally among all user.*
- *The minimum charge is \$2.50; the rate/1000 gallons is \$3.50.*
- *Customers are notified annually of the rate by a special notice in their bills each June.*
- *We have enough information to calculate the treatment rate.*

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- *Treatment rate = OM&R + Debt Service Costs divided by the total flow received at the wastewater plant.*
- *From previous information OM&R costs are \$1,025,000. Debt Service Costs are \$450,000/yr. We found on our plant tour that the total flow averages 1.9 mgd or 700 million gallons/yr.*
- *Therefore the treatment rate is  $(\$1,025,000 + 450,000)/700,000 = \$2.11/1000$  gallons. This indicates that the current rate of \$3.50/1,000 gallons is probably high. During the remainder of this course, we'll examine the reason.*
- *Overhead #44*
- *We found that the utility determines the wastewater user fees by water meter readings.*
- *The utility's sewer use ordinance provides for surcharges for high strength wastes, but the community's rate schedule does not have a surcharge rate. This is an item that the utility needs to correct.*
- *Now, an average 7,000 gallon/mo. user pays \$324/yr.  $((\$2.50 + (\$3.50/1000 \text{ gal.} \times 7,000 \text{ gal})) \times 12 \text{ mo.} = \$324.$*
- *The utility has never billed a surcharge fee. A pretreatment enforcement program has never been established by the utility.*
- *Yes, all users are billed separately for wastewater services.*
- *There are no other political jurisdictions served by this utility.*

- *Worksheet 7*

- *Overhead # 45*

- *At the plant, you found: the grounds were poorly maintained; grass needed cutting; discarded equipment was strewn about; and spillage from the sludge hauling operation created a nuisance.*
- *Inadequate supplies of chemicals and lab supplies were on hand; the sludge return pump was out-of-service.*
- *While the facility was adequately staffed, no back-up staff was available for emergencies, (to cover for vacations and sick leave, etc.).*

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- \* **Recommend Solutions**

- \* **Establish Response Deadline**

- *Use Overhead # 46 to illustrate a draft report.*
- *If you receive a regulatory evaluation the report will: (1) state the problem; (2) cite any applicable federal, state or local requirements; (3) propose recommendations for resolving the problem; and (4) ask the community to develop a corrective action plan.*
- *Use this as a guide for a self-evaluation.*

- \* **Follow-up**

- *Follow-up! Keep on top of this situation! Offer assistance.*

\*\*\*\*\*

Utility/Community Name: \_\_\_\_\_

Name of Local Contact: \_\_\_\_\_

Telephone Number: (\_\_\_\_\_) \_\_\_\_\_ Date \_\_\_\_\_

# User Service Charge Worksheet

## Management/Operating Policies/Compliance

1. Describe any NPDES permit violation(s) which occurred within the last 12 months and the reason(s) for the violation(s).

*Bio  
INADEQUATE SLUDGE RETURN*

2. Did insufficient operating revenues contribute to the NPDES violation(s)?

Yes ☐ No ☐

3. Does the utility receive monthly accounting reports for wastewater revenues and expenses?

Yes ☒ No ☐

4. Does the utility have a pretreatment ordinance?

Yes ☒ No ☐

5. Does the organizational structure of the wastewater utility present any operational problems?

Yes ☒ No ☐

6. What is the annual personnel turnover rate?

*LOW*

7. Are the procedures for collecting delinquent wastewater bills adequate?

Yes ☐ No ☒

## Financial Information

1. Does the wastewater budget show revenues and expenses by line item? (Note: The wastewater budget should be separate from other governmental utility budgets like water, garbage disposal, etc.)

Yes



No

2. What are the total annual budgeted revenues for the wastewater operation?

### TOTAL BUDGETED REVENUES

	\$
User service charges	1,700,000
Hookup/impact fees	25,000
Taxes/assessments	10,000
Interest earnings	50,000
Other	5,000
<i>Total Budgeted Revenues</i>	<i>1,790,000</i>

3. What are the total annual budgeted expenses for the wastewater operation?

### TOTAL BUDGETED OPERATING EXPENSES

	\$
Salaries and benefits	450,000
Utilities	25,000
Equipment replacement fund	200,000
Chemicals	30,000
Supplies and parts	20,000
Contract services	0
Administration	125,000
Principal and interest payments	450,000
Other	25,000
<i>Total Budgeted Operating Expenses</i>	<i>1,495,000</i>

4. What are actual revenues to date? How do they compare with budgeted revenues to date?

BUDGETED REVENUES VS. ACTUAL		
	\$ Budgeted	\$ Actual
	$1,790,000 \times .25$	
Total Revenues	447,500	424,000

5. What are actual expenses to date? How do they compare with budgeted expenses to date?

BUDGETED EXPENSES VS. ACTUAL		
	\$ Budgeted	\$ Actual
	$1,475,000 \times .25$	
Total Operating Expenses	368,750	375,500

6. Does the wastewater utility show a cash flow problem?

Yes ☐ No ☒

#### ACTUAL REVENUES & EXPENSES

	\$
Total Revenues	424,000
Total Operating Expenses (-)	375,500
Cash Available	48,500

7. How does the utility cover a revenue deficit?

# Worksheet-4

8. Does the utility review user service charges and adjust them annually to reflect budgeted or actual expenses?

Yes ☒ No ☐

9. Does the utility have an equipment replacement fund (ERF)?

Yes ☒ No ☐

10. What percentage of operation, maintenance and equipment replacement funds are set aside for equipment replacement?

$$\begin{array}{l} \text{Equipment} \\ \text{Replacement} \\ \text{Fund} \\ \text{(ERF) (\%)} \end{array} = \frac{\text{ERF Costs}}{\text{(Total Operating Expenses) - (P\&I Payments)}} \times 100\%$$

$$\text{ERF (\%)} = \boxed{19.5}$$

11. Does a certified public accounting firm review the utility accounts?

Yes ☒ No ☐



## User Service Charge System

1. Does the utility distribute the wastewater collection and treatment costs proportionally to each user, user class or political jurisdiction?

Yes ☒ No ☐

2. Does the utility use a sewer use ordinance that incorporates a proportionate wastewater rate schedule? (Attach a copy.)

Yes ☒ No ☐

3. Does the utility distribute the I/I costs proportionally to each user, user class or political jurisdiction?

Yes ☒ No ☐

4. Does the rate schedule specify a uniform rate for wastewater treatment based on the volume of usage?

Rate = \$ 3.50 /1000 gal

Yes ☒ No ☐

5. Does the rate schedule provide for a minimum charge?

Yes ☒ No ☐

6. What is the minimum charge?

\$ 2.50

7. Are customers notified annually of the wastewater rates?

Yes ☒ No ☐

8. What is the actual total operation, maintenance, equipment replacement and debt service costs per 1000 gallons of wastewater treated by the utility?

Treatment Rate =  $\frac{\text{OM\&R} + \text{Debt Service Costs}}{\text{Total Flow}}$  = \$ 2.11 /1000 gal

**Worksheet-6**

9. How does the utility determine wastewater user fees? (Check one)

Water meter readings?

☒

Equivalent dwelling unit?

☐

Other? (Specify)

☐

10. Does the rate schedule specify surcharges for high-strength wastes?

Yes

No

☒

11. How does the utility determine surcharges?

12. What is the average annual wastewater bill for a typical residential user?

\$

324

13. Are users billed separately for wastewater services?

Yes

No

☒

14. Do all political jurisdictions served by the utility have a sewer use ordinance which incorporates a proportional wastewater rate schedule?

Yes

No

☐

15. Do users outside the utility's political boundary pay the same rate as inside users?

Yes

No

☐

16. Do all serviced political jurisdictions meet the same user service charge system conditions as the wastewater treating utility? (If No, describe.)

Yes

No

☐

## Wastewater Facility Tour

1. What is the current average flow treated at the facility (gallons per day)?	1,900,000	gpd
2. Does the facility appear to operate normally?	Yes	No <input checked="" type="checkbox"/>
3. Is any equipment out of service? (Specify)	Yes	No <input checked="" type="checkbox"/>
4. Does maintenance appear satisfactory?	Yes	No <input checked="" type="checkbox"/>
5. Is good housekeeping evident?	Yes	No <input checked="" type="checkbox"/>
6. Is the laboratory clean and well-organized?	Yes	No <input checked="" type="checkbox"/>
7. Are adequate chemicals, supplies and parts on hand?	Yes	No <input checked="" type="checkbox"/>
8. Is staffing adequate for the operation?	Yes	No <input checked="" type="checkbox"/>
9. Are operators certified?	Yes	No <input checked="" type="checkbox"/>
10. Does the staff receive formal training?	Yes	No <input checked="" type="checkbox"/>
11. Do operational and compliance records appear adequate?	Yes	No <input checked="" type="checkbox"/>
12. Note other comments or problems:		

**Follow-up letter after a user charge evaluation**

**(Date)**

**Mr. James Sullivan  
Finance Director  
City of Anytown  
100 S. Main St.  
Anytown, USA**

**Dear Mr. Sullivan:**

**It was a pleasure to meet with you and your staff on (date) to discuss your wastewater utility's financial operations. As a result of our discussions and the tour of the wastewater treatment facility, I noted the following concerns.**

- 1. The wastewater and water accounting systems are not separate. The water and wastewater operations need to be financially independent and self-sufficient. The Anytown wastewater treatment facility was partially financed by a grant from the U.S. Environmental Protection Agency. This means Anytown must establish a financial management system which separately accounts for wastewater revenues and expenditures. The system must also identify the basis for determining operation, maintenance, equipment replacement, debt service costs and user service charges.**
- 2. The wastewater utility does not collect surcharges from users discharging high-strength waste, although the city's wastewater system's sewer use ordinance requires a surcharge on those users whose wastes increase operation and maintenance costs. This ordinance must be enforced as a condition of your EPA grant.**

**FIGURE 46**

3. The actual wastewater expenses to date at the half-way point in this fiscal year are \$125,000. The total budgeted amount for the fiscal year is \$200,000. This results in a projected deficit of \$50,000 for the year. User service charges must be increased to provide the needed operating revenue since collection of surcharge revenues will not be sufficient to eliminate the deficit.
4. The wastewater unit volume rate is insufficient to cover the operational costs of the utility. A rough calculation showed that the OM&R costs are \$1.20/ 1,000 gallons and debt service costs are \$0.60 for a total rate of \$1.80/ 1,000 gallons.
5. The accounting system does not budget for an equipment replacement fund. You need an equipment replacement fund to pay for equipment and accessories that wear out during the life of the treatment facility. The fund is not to be used for expanding the capacity or enhancing the treatment facility's performance. It must be used to keep the facility operating at the level for which it was designed and constructed. This is an EPA requirement.
6. At the treatment facility, the secondary clarifier sludge return pump was inoperable and a backup pump was not available. The sludge return pump is essential to proper operation. As we discussed during the visit, you should install a temporary pump as soon as possible and repair or replace the inoperable sludge pump. You need a backup pump to prevent this circumstance from reoccurring.
7. The treatment plant grounds were poorly maintained. The grass needed mowing; discarded equipment was lying around; spillage from the sludge hauling operation created a nuisance. The appearance of a wastewater treatment facility is usually a good indicator of the level of professionalism, motivation and training of the staff. It also may be an indicator of inadequate funding/staffing of the treatment facility. As a result of our discussions and tour of the facilities, it appears that additional staff is needed to achieve proper operation and maintenance.

FIGURE 46A

8. At the treatment facility, there was only a two-day supply of chlorine and a limited supply of laboratory reagents and chemicals on hand. Good management practice requires an adequate supply of essential chemicals and reagents on hand to operate and maintain the facility properly. From our discussion, it appears the Anytown utility should revise its purchasing procedure to allow the superintendent to order routine supplies directly without waiting for governing body approval.
9. This system had exceeded its monthly average BOD NPDES permit limit for two consecutive months. The major cause of this violation appears to be inadequate sludge return. The pump outage discussed above should be rectified immediately.

Many of the above concerns are consistent with the conclusion that Anytown's wastewater treatment facility needs more financial resources for proper operation and maintenance. I have enclosed a copy of EPA's publication Building Support for Increasing User Fees that tells how to increase the facility's revenue base.

Please develop a corrective action plan with compliance dates to address the above findings, and submit the plan to this office no later than (date).

Our office will be glad to work with the City of Anytown to protect its water quality and improve its wastewater financial operations. If you have questions about this report, please feel free to call me.

Sincerely,

Anne Taylor  
Utility Board Manager

enclosure

FIGURE 46B

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**V. DETERMINING USER SERVICE CHARGE RATES**

**A. GETTING STARTED**

**B. UNDERSTAND THE THEORY**

**C. CALCULATE USER CHARGES**

*Tell the topics that will be covered in this session*

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## V.A. GETTING STARTED

- *Before determining what your utility's user service charge rates should be, you'll have to gather some information. Most of this information has already been discussed.*
- *Financial Statement*
- *From the latest fiscal year financial statement, obtain all wastewater collection and treatment expenses.*
- *Use Overhead # 47*
- *This information was presented earlier. Recall the salaries and fringe benefits were \$450,000; utilities were \$175,000; equipment replacement fund was \$200,000, chemicals, supplies and parts were \$50,000; contract services was \$0; administrative costs were \$125,000; principal and interest payments were \$450,000; other costs were \$25,000. The total expenses were \$1,475,000. Remember to use actual (not budgeted) expenses when checking current rates and budgeted expenses when setting new rates.*
- *You will need all wastewater revenues other than user charges for the latest fiscal year.*
- *Use overhead # 48*
- *Revenues (other than user charges) included connection fees - \$15,000; special assessments - \$10,000; interest on investments - \$50,000; other (impact fees, etc.) - \$15,000; minimum service fees - \$20,000. The total non-user charge revenues were \$110,000.*

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- Current User Service Charge Rate Schedule
- *Next, gather information on the current rate schedule used to bill customers. Usually wastewater usage is based on metered water usage.*
- *Determine the breakdown by class of user - residential, commercial or industrial.*
- *If the utility does not meter water sales, you will need information on types of customers such as number of single family residences, apartments, commercial users, restaurants, industrial users, etc.*
- *Overhead # 49*
- *This is an example list of un-metered users.*
- Total Wastewater Collected and Treated
- *Next, you will need to gather information on the total annual flow (expressed in gallons) through the treatment plant for the same 12 month period covered by the financial statement.*
- *This information can be obtained from wastewater plant meter readings.*
- Total Annual Influent BOD and SS
- *Information on annual pounds of biochemical oxygen demand (BOD) and suspended solids (SS) treated by the plant over the same 12 month period can be obtained from treatment plant records.*
- *Use overhead # 50*

\*\*\*\*\*

# **WASTEWATER COLLECTION AND TREATMENT EXPENSES FY 1990**

Salaries and Fringe Benefits	\$450,000
Utilities	175,000
Equipment Replacement Fund	200,000
Chemicals, Supplies and Parts	50,000
Contract Services	0
Administrative Costs & Office Supplies	125,000
Principal and Interest Payments	450,000
Other Costs	25,000
	<hr/>
<b>TOTAL EXPENSES:</b>	<b>\$1,475,000</b>

# **DETERMINING USER SERVICE CHARGE RATES OTHER WASTEWATER REVENUES**

Connection Fees	\$15,000
Special Assessments	10,000
Transfers from Other Funds	0
Interest on Investments	50,000
Other Revenues	15,000
Minimum Service Fee	20,000

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**TOTAL, OTHER REVENUES:      \$110,000**

# **DETERMINING USER SERVICE CHARGE RATES**

## **NUMBER OF USERS BY TYPE - UNMETERED WATER**

<b>TYPE OF CUSTOMER</b>	<b>NUMBER OF CUSTOMERS</b>
Single-Family Residences	8,000
Apartments (1-2 bedroom)	1,500
Apartments (3 or more bedrooms)	1,000
Commercial/Institutional	900
Restaurants and Taverns	100
Industrial	100

## **FROM STP RECORDS . . .**

**TOTAL ANNUAL FLOW = 700,000,000 GALLONS**

**TOTAL ANNUAL BOD = 2,200,000 POUNDS**

**TOTAL ANNUAL SS = 2,200,000 POUNDS**

\*\*\*\*\*

## V.B. UNDERSTAND THE THEORY

- *The basic premise here is to operate the wastewater utility as a non-profit business. In other words, the wastewater utility provides a service to residents. It should not make (MUCH) money and should never, never lose money!*
- *For this to happen, revenues and expenses must balance each other.*
- *By the budgeting process, we determined the expected annual expenses.*
- *We also determined the expected annual revenues from all sources other than user charges.*
- *The big variable is USER CHARGES.*

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## V.C.            CALCULATE USER CHARGES

- *EPA has developed a computer program which uses the information outlined above to help calculate user service charge rates. The computer program is easy to use. It can be used by those who are not proficient in computer operations, and it comes with a step-by-step instruction manual. The computer program requires an IBM-PC or PS/2 compatible computer.*
- *(Hold up booklet on calculating user charges).*
- *A major advantage of using the computer model is that assumptions can be easily changed.*
- *In this session, we will follow the same step-by step process the computer program uses, but we will determine rates manually.*
- *We will use the instruction booklet and worksheets provided with the computer program.*
- *Step 1*
- *Gather the information mentioned above: financial statements, the current rate schedule, total wastewater treated, influent biochemical oxygen demand and suspended solids and usage by customer classification.*
- *Now we are ready to go through an example.*

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- Overhead # 62
- New user service charge rate, including infiltration/inflow (per 1,000 gallons)  
=  $\$1.02 \times (700,000,000 / 500,000,000) = \$1.43 / 1,000$  gallons.
- Thus, a 7,000 gal./mo. residential user would pay  $7 \times \$1.43 = \$10.01$ .
- Overhead # 63
- Actual Industrial Surcharge Rate (per 1,000 gallons) =  $(\$1,365,000 \times .479) / 150,000 = \$4.36/1,000$  gal.
- Overhead # 64
- New industrial wastewater surcharge rate, including infiltration/inflow (per 1,000 gallons) =  $\$4.36 \times (700,000,000 \text{ gal} / 500,000,000 \text{ gal}) = \$6.10/1,000$  gallons.
- Total new industrial wastewater surcharge rate =  $\$1.43 + \$6.10 = \$7.53$
- Thus a 100,000 gal/mo industrial user would pay  $\$7.53 \times 100 = \$753/\text{mo}$ .
- Overhead # 65
- Refer to worksheet number 11. We calculated lines 31 - 34b. (Discuss these calculations and allow time for questions.)
- Recall, that in section IV, we used the wastewater user service charge rate of  $\$3.50/1000$  gallons for all customers (residential and industrial). We calculated the monthly charge for an average 7,000 gallons/mo. residential was  $\$24.50$ . Add the minimum bill of  $\$2.50$  and this is  $\$27.00/\text{mo}$ .
- Here, we just calculated the average monthly bill for the same 7,000 gallons/mo. residential user at  $\$10.01$ . Add minimum bill and this is  $\$12.51$ .
- Since our example system has not implemented a surcharge for excess BOD and suspended solids, industries got a break in the cost of wastewater treatment. Guess who picked up the tab for the remainder? The residential (and commercial) users.
- This system needs to implement its sewer use ordinance and equitably distribute the costs of O&M among customers.

\*\*\*\*\*



# **DETERMINING USER SERVICE CHARGE RATES METERED WATER**

**Minimum Bill = \$2.50  
Current Wastewater Services  
Billing Schedule  
Monthly Rates**

<b>Total Gallons Treated</b>		<b>Rate per 1,000 gallons</b>
<b><i>From . . .</i></b>	<b><i>To . . .</i></b>	
0	2,000	\$3.50
2,001	5,000	3.50
5,001	10,000	3.50
10,001	25,000	3.50
25,001	Over	3.50

# **WASTEWATER COLLECTION AND TREATMENT EXPENSES FY 1990**

Salaries and Fringe Benefits	\$450,000
Utilities	175,000
Equipment Replacement Fund	200,000
Chemicals, Supplies and Parts	50,000
Contract Services	0
Administrative Costs & Office Supplies	125,000
Principal and Interest Payments	450,000
Other Costs	25,000
	<hr/>
<b>TOTAL EXPENSES:</b>	<b>\$1,475,000</b>

(WORKSHEET 9, LINE 20)

# **DETERMINING USER SERVICE CHARGE RATES OTHER WASTEWATER REVENUES**

Connection Fees	\$15,000
Special Assessments	10,000
Transfers from Other Funds	0
Interest on Investments	50,000
Other Revenues	15,000
Minimum Service Fee	20,000

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**TOTAL, OTHER REVENUES:      \$110,000**

(WORKSHEET 9, LINE 21)

# **ANNUAL METERED WATER FLOW**

Residential	250,000,000 gallons
Commercial	100,000,000 gallons
Industrial	150,000,000 gallons
<hr/>	
<b>TOTAL</b>	<b>500,000,000 gallons</b>
	(WORKSHEET 8, LINE 4)

**Annual Total  
Wastewater  
Flow**

**700,000,000 gallons**  
(WORKSHEET 8, LINE 4a)

# WORKSHEET 8

If you meter fresh water, fill in items 1 through 4.  
If you don't meter fresh water, enter only item 4a.

Annual Residential Metered Water Flow (gallons)	<u>250,000,000</u>	1
Annual Commercial/Institutional Metered Water Flow (gallons)	<u>100,000,000</u>	2
Annual Industrial Metered Water Flow (gallons)	<u>150,000,000</u>	3
Total Annual Metered Water Flow (1+2+3)	<u>500,000,000</u>	4
Total Annual Wastewater Flow	<u>700,000,000</u>	4a

If you don't meter fresh water, fill in Items 5 - 11a.

Type of Unit	Number of Units	EDUs per unit	Total EDUs (Units x EDUs per)	
Single family residences	_____	1.00	_____	5
Apartments (1-2 bedrooms)	_____	0.75	_____	6
Apartments (3+ bedrooms)	_____	1.00	_____	7
Commercial/Institutional	_____	2.50	_____	8
Restaurants and taverns	_____	10.00	_____	9
Industries	_____			
Grand Total EDUs (5+6+7+8+9)			_____	10

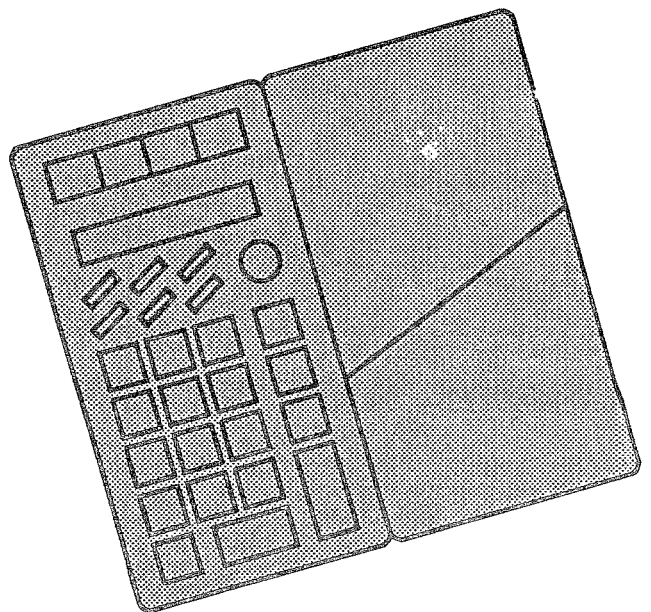
Normal BOD and SS loadings  
0.229 lbs./100 gallons of wastewater

0.229 lbs./100 gallons x 500,000,000 gallons =  
1,147,000 lbs. BOD or SS

(WORKSHEET 9, LINES 13 AND 17)

**Actual BOD or SS = 2,200,000 lbs.**

(WORKSHEET 9, LINES 12 AND 16)



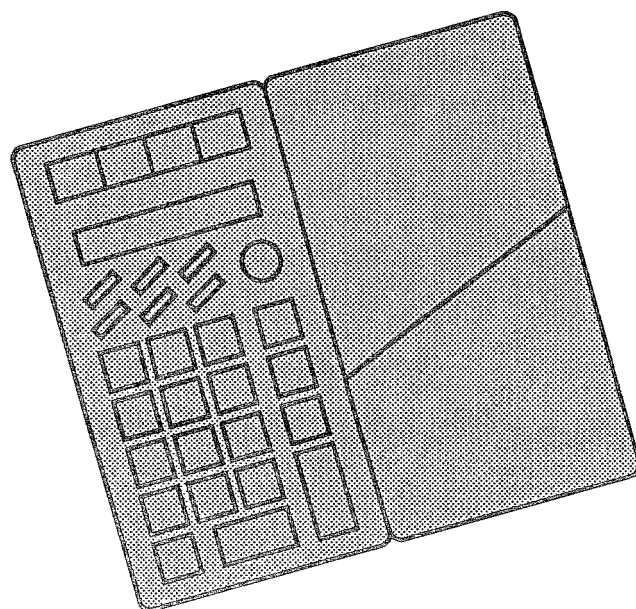
## Excess BOD and SS

$$\begin{array}{r} 2,200,000 \text{ lbs.} \\ - 1,147,000 \text{ lbs.} \\ \hline \end{array}$$

$$1,053,000 \text{ lbs.}$$

$$\% \text{ Excess} = \frac{1,053,000}{1,147,000} \times 100\% = 91.8\%$$

(WORKSHEET 9, LINES 15 AND 19)



# WORKSHEET 9

Theoretical Non-Industrial Wastewater Flow

[Item 10 *times* 2.6 people *times*

100 gallons per day *times* 365 days]

\_\_\_\_\_ 11

Theoretical Industrial Wastewater Flow

[Item 4 *minus* Item 11]

\_\_\_\_\_ 11a

**For both metered and unmetered systems, fill in Items 12 - 19, and 20 - 23 or 26 - 32.**

Total Annual Influent BOD (pounds)

2,200,000 12

Calculate Normal Annual Influent BOD (pounds)

[Item 4a *times* .002294 pounds per gallon]

1,147,000 13

Calculate Excess BOD

[Item 12 *minus* Item 13] If Item 12 is less than Item 13, enter 0.

1,053,000 14

Percentage Excess BOD

[(Item 14 *divided by* Item 13) x 100]

91.8 15

Total Annual Influent SS (pounds)

2,200,000 16

Calculate Normal Annual Influent SS (pounds)

[Item 4a *times* .002294 pounds per gallon]

1,147,000 17

Calculate Excess SS

[Item 16 *minus* Item 17] If Item 16 is less than Item 17, enter 0.

1,053,000 18

Percentage Excess SS

[(Item 18 *divided by* Item 17) *times* 100]

91.8 19

**If both Items 15 and 19 equal zero, then complete Items 20 through 23 and the appropriate metered item (24) or unmetered items (25 through 25e).**

Total Expenses (see pages 11-16)

\_\_\_\_\_ 20

Other Revenue (see pages 17-18)

\_\_\_\_\_ 21

Net Expenses [Item 20 *minus* Item 21]

\_\_\_\_\_ 22

1,000s of Gallons Wastewater [Item 4a *divided by* 1,000]

\_\_\_\_\_ 23



# WORKSHEET 10

## Metered Water

Actual Wastewater Rate (per 1,000 gallons)  
[Item 22 *divided by* Item 23]

\_\_\_\_\_ 24

New User Service Charge Rate (per 1,000 gallons)  
[Item 24 *times* (Item 4a *divided by* Item 4)]

\_\_\_\_\_ 24a

## Unmetered Water

New User Service Charge Rate (per 1,000 gallons)  
[Item 22 *divided by* Item 23]

\_\_\_\_\_ 25

Residential, per month  
[Item 25 *times* 7.8 thousand gallons/month]

\_\_\_\_\_ 25a

Apartments, 1-2 bedroom, per month  
[Item 25a *times* 0.75]

\_\_\_\_\_ 25b

Apartments, 3+ bedrooms, per month  
[Item 25a *times* 1.00]

\_\_\_\_\_ 25c

Commercial/Institutional, per month  
[Item 25a *times* 2.50]

\_\_\_\_\_ 25d

Restaurants/Taverns, per month  
[Item 25a *times* 10.00]

\_\_\_\_\_ 25e

If either item 15 or 19 is greater than zero, then complete Items 26 through 32 and the appropriate metered items (33 and 34) or unmetered items (35 through 36).

Total Expenses (see pages 11-16)

1,475,000 26

Other Revenue (see pages 17-18)

110,000 27

Net Expenses [Item 26 *minus* Item 27]

1,365,000 28

1,000s of Gallons Wastewater [Item 4a *divided by* 1,000]

700,000 29

Enter Item 15 or 19, whichever is greater

91.8 % 30

**Portion of treatment cost  
attributable to  
normal strength wastewater**

$$100 \div (100 + 91.8) =$$

**.521 or 52.1%**

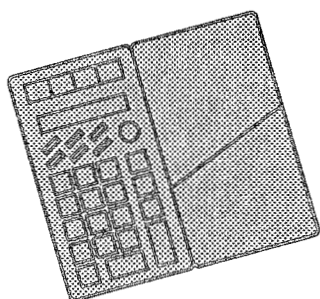
(WORKSHEET 11, LINE 31)

**Portion attributable to  
excess BOD or SS**

$$\begin{array}{r} 100.0\% \\ - 52.1\% \\ \hline \end{array}$$

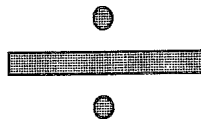
**47.9%**

(WORKSHEET 11, LINE 32)



# **ACTUAL WASTEWATER RATE/1,000 GALLONS =**

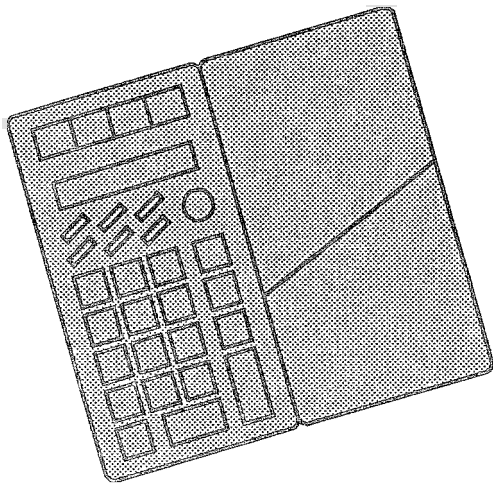
Net expenses x portion attributable to normal BOD or SS



1,000s of gallons of wastewater treated

$$\frac{\$1,365,000 \times 0.521}{700,000 \text{ gallons}} = \$1.02$$

(WORKSHEET 11, LINE 33)

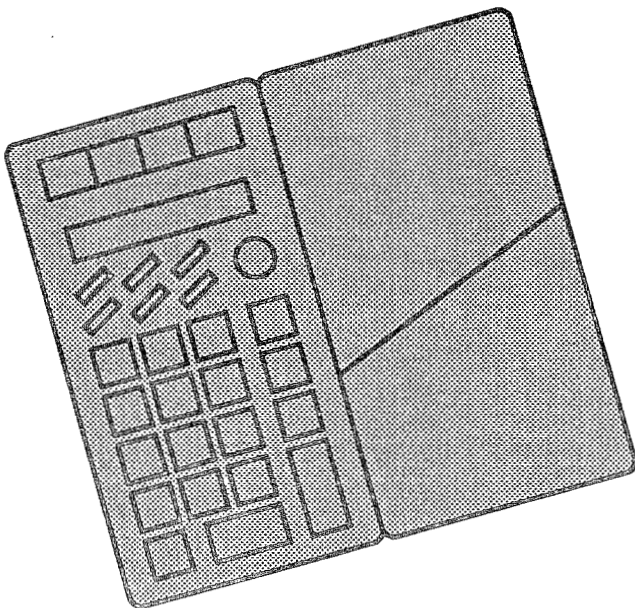


## **NEW USER SERVICE CHARGE RATE**

$$\frac{\$1.02}{1,000 \text{ gals.}} \times \frac{700,000,000 \text{ gals.}}{500,000,000 \text{ gals.}} =$$

$$\frac{\$1.43}{1,000 \text{ gals}}$$

(WORKSHEET 11, LINE 33a)



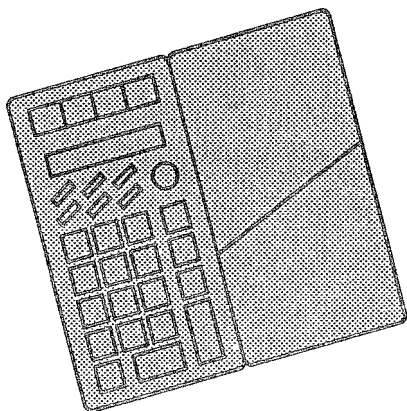
Actual Industrial  
Surcharge Rate/1,000 gals.  $\frac{\quad}{\quad}$

Net expenses  $\times$  portion attributable  
to excess BOD or SS  
 $\div$

1,000s of gallons treated industrial wastewater

$$\frac{\$1,365,000 \times .479}{150,000 \text{ gallons}} = \$4.36/1,000 \text{ gallons}$$

(WORKSHEET 11, LINE 34)



## **NEW INDUSTRIAL WASTEWATER SURCHARGE RATE**

$$\frac{\$4.36}{1,000 \text{ gals.}} \times \frac{700,000,000 \text{ gals.}}{500,000,000 \text{ gals.}} =$$

$$\frac{\$6.10}{1,000 \text{ gals.}} \quad (\text{WORKSHEET 11, LINE 34a})$$

### **TOTAL INDUSTRIAL USER SERVICE CHARGE RATE:**

$$\begin{array}{r} \$1.43/1,000 \text{ gals.} \\ + \quad \$6.10/1,000 \text{ gals.} \\ \hline \end{array}$$

$$\begin{array}{r} \$7.53/1,000 \text{ gals.} \\ (\text{WORKSHEET 11, LINE 34b}) \end{array}$$

\*\*\*\*\*

## **VI. SELLING A USER CHARGE INCREASE TO CUSTOMERS**

- A. A GOOD PUBLIC EDUCATION PROGRAM IS THE KEY TO SUCCESS**
- B. HOW DO YOU CONDUCT A PUBLIC EDUCATION CAMPAIGN?**
- C. ONCE YOU'VE INCREASED USER CHARGES, HOW DO YOU KEEP ON TRACK?**

*Tell the topics that will be covered in this session*

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**A. A GOOD PUBLIC EDUCATION PROGRAM IS THE KEY TO SUCCESS**

**\* Many Water and Wastewater Operations Are Facing Very Serious Financial Problems**

- *Use Overhead # 67*
- *As we've already discussed many water and wastewater operations are facing very serious financial problems. And, financial problems lead - sooner or later - to water quality and enforcement problems.*
- *State and federal pressures to meet and maintain water quality standards will continue and translate into higher costs.*
- *It goes without saying that inflation will continue to increase operational costs.*
- *And now grants are gone.*
- *Additional revenue will be needed sooner or later. The rate of increase may be slowed by improving efficiency through the better management practices that we've discussed today - such as better purchasing procedures, better utilization of manpower, improved collections, money management and so forth.*
- *Experience shows that if operations are short-changed --- such as holding off on repair/replacement of a malfunctioning pump --- it usually costs more in the long run. And again, you stand the risk of having facilities deteriorate to the point that effluent limits are violated.*

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**\* Improving Overall Financial Management is a Way Out of Those Problems**

- *The star of the good financial management tool kit is adequate user service charges.*
- *They are the best source of revenue.*
- *Wastewater treatment operations should be financially self-sufficient - just like any other utility operation.*
- *This probably equates to increasing user charges. And that action is one most feared by local officials.*

**\* Increasing User Service Charges Can Equate to Political Suicide**  
**Just Ask West Carolina Regional Sewer Authority in Greenville, S.C.**

- *Some lessons have to be learned the hard way.*
- *Greenville S.C.'s West Carolina Regional Sewer Authority instituted a 30% rate increase which met with major opposition. One year later the same authority implemented a 56% increase successfully. What made the difference? Stay tuned.*
- *Do you know of instances where increasing rates have spelled political defeat for local government officials?*

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\* **Or Local Government Officials Can Raise Rates and Live to Tell About It**

- *Kokomo Knows ----- How to Do It*
- *Raising rates doesn't have to be disastrous.*
- *Kokomo, Indiana had several problems to correct in its sewerage system - major line rehabilitation, odor problems and repair needs.*
- *They paid for these projects - 17 in all - with a bond issue backed by a 45% rate increase.*
- *The rate increase met with little opposition. Why?*

\* **The Difference Between Suicide and Success is PUBLIC EDUCATION!**

- *Use Overhead # 68*
- *Kokomo implemented a public education program well in advance of the rate increase.*
- *Milwaukee has successfully increased its user charges over the past 10-15 years to finance \$1.7 billion in water pollution control efforts. They use an effective, ongoing public education program.*
- *How can you tell whether your public education is successful? Two tests are:*
  - (1) *Little or no public opposition*
  - (2) *Higher user charges are not an election issue*

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## B. HOW DO YOU CONDUCT A PUBLIC EDUCATION CAMPAIGN?

### \* Plan Ahead

#### Think Through What You've Been Doing and Why

- *Successful public education programs do not just happen. Like anything worthwhile - they require time and effort.*
- *Start early and think through your operation. What's right with it and what needs improvement.*
- *Use Overhead # 69*
- *Ask yourself - Are we really managing well here? Is management top-heavy? Can operating costs be cut? Do we let past due accounts slide? You may need an outside expert to help evaluate your operation.*
- *What have you run across in your experience that could save the utility money? ..... These are some things I have found .....*

#### Decide on Other Steps to Take

- *Initiate water conservation practices.*
- *Shape the workers into a leaner, team-oriented group.*

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- *Improve purchasing procedures. Do what you can to reduce/delay the inevitable - a rate increase.*
- *But, don't put it off too long!*
- *Worn-out pumps and lines will not get better with time. They get worse!*

**\* Get Ready to Meet the Public**

- *Take photos of facilities, equipment and people. These visuals will help later.*
- *Document the improvements you have made.*
- *Document the remaining needs.*

**\* Budget for the Public Education Program**

- *Use Overhead, # 70*
- *The size of the budget will depend on the objectives.*
- *Milwaukee Metropolitan Sewerage District spent over \$700,000 during four years to build public trust for the district's pollution abatement program. This bought: a 32 ft. traveling education vehicle, a citizen newsletter, newspaper advertisements and TV time.*

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- *But, much can be accomplished with less. Twin Falls, Idaho spent \$2,000 on a one day Clean Water Day event, newspaper advertisements and a poster contest for school children. They also sponsored plant tours and educational demonstrations.*

### **Staff**

- *You may use existing staff who take on additional duties to put together the educational program; or, you may hire someone for these responsibilities or use outside consultants.*
- *Outside experts, such as public relations firms with experience in environmental matters can be a great help.*
- *But, remember to keep existing staff deeply involved. They know the system and its problems.*

### **Materials and Services**

- *Budget for brochures, posters, slides, videos, advertisements and other promotional items.*

### **Overhead**

- *Don't forget about budgeting for postage, office space, and supplies. If your public education program is small, these may be absorbed into the existing operating budget.*

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\* **Shape the Message**

**What Do you Want To Say?**

- *Use Overhead # 71*
- *Establish the value. People are willing to pay a fair price for something they value. Tell users what they are getting for their money.*
- *Describe and emphasize the benefits. Had any recent construction or major repairs? Show them! Highlight activities which increased efficiency.*
- *Give cost comparisons. How does the wastewater user charge compare with the cost of cable TV? the cost of basic phone service?*
- *Link community growth and economic development to wastewater treatment services. Did your town attract a new industry because adequate sewerage services were available?*
- *Emphasize increased property values. Having sewer service is an asset. Just ask someone who has to rely on a failing septic tank/drainfield system.*
- *Discuss public health benefits of eliminating water borne diseases and providing a clean environment.*
- *Think through the objectives -- increase revenue to issue bonds, to construct new facilities, to establish public trust and support. Different objectives will require different approaches. Will this be an on-going program?*
- *Money and snazzy graphics aren't enough. Your message is what will convince your audience. Be honest and straightforward!*

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\* **What Methods Will be Used?**

- *How can you best convey the message? Will meetings do it? Plant tours for certain groups? Technical reports? Newspaper advertising? TV?*
- *Think about methods, objectives, budget, the spokesperson and time frame considerations.*

\* **Choose Spokesperson(s)**

**Who Are**

- **Organized**
  - **Enthusiastic**
  - **Great Communicators**
  - **Natural Leaders**
  - **Familiar with the Subject**
- 
- *Use Overhead # 72*
  - *Who's the messenger? You need a primary spokesperson - an insider - to take the lead. The public will trust a messenger they know. The spokesperson should be enthusiastic, familiar with the subject, a good communicator, and able to lead and shape opinions into consensus.*
  - *Back up the primary messenger with technical experts, communications specialists and city personnel.*
  - *Engineering consultants, especially those with marketing experience can help.*

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- *Seek out consultants who specialize in advertising and public relations.*
- *College students majoring in journalism at a nearby college may be able to help.*

**\* Get the Message Out**

**Target Audiences**

- **Start with the Workplace**
  - **Local Government Officials**
  - **Community Groups**
  - **Media**
  - **Youth**
  - **General Public**
- 
- *Use Overhead # 73*
  - *Start the message in the work place. Turn your staff into a public relations team. What they say in casual comments can create a positive or a negative image of the utility operation. Educate employees in answering questions and complaints.*

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- *Target audiences and identify what information they will need.*
- *Target local government officials, business and civic leaders. Public officials need detailed information for decision-making. Use graphs to simplify complex information. Take them on tours of the system. Show them your success stories. Business and civic leaders will want to know how services (or lack of them) will affect the community's business and economic health.*
- *Target the media. Work with them! They can help you tremendously. The media are the eyes and ears of the public. You'll get radio, TV and newspaper coverage. Make sure it's the kind of coverage you want!*
- *Reporters are interested in how issues affect the public, particularly "quality of life" issues. Educate them about wastewater treatment. Treatment is complicated. Your challenge is to explain complex processes, problems and proposed solutions in easy-to-understand terms.*
- *Communicate with the media through news releases, fact sheets, telephone calls and plenty of one-on-one contact.*
- *Target youth. Youth will be future rate payers and they have enormous influence on the current rate payers - their parents. Youth are eager to learn. Sponsor a water science fair, give wastewater plant tours or sponsor a poster contest.*

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- *Target the general public. How do you reach the people who do not belong to a civic group, read a newspaper or have children? Use a newsletter with the monthly bill, use a telephone opinion survey or use displays at libraries and shopping malls.*
- *Repeat the message several times in a variety of ways.*
- *Remember, your public education campaign should be an on-going activity. Intensity can be varied as needed.*

**\* Evaluate and Document**

- *Evaluate your public education program so you can improve next time. Ask: Did we accomplish our objectives? Did we gain public support?*
- *Use an opinion poll.*
- *Keep track of complaint calls. Track media reports to help in your evaluation.*
- *Keep files so you won't have to start from scratch next time your system needs a rate increase.*

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**C. ONCE YOU'VE INCREASED USER CHARGES, HOW DO YOU  
KEEP ON TRACK?**

- \* Make Small Annual Adjustments**
- \* Move the Utility Operations Out of the Political Realm**
- \* Use Monthly Billing**
- \* Bill Separately for Water, Wastewater, Trash Disposal, Etc.**
- \* Continue PUBLIC EDUCATION**

- *How can you assure adequate future revenues? An EPA study provides these suggestions:*
- *Overhead # 74*
- *Make small annual adjustments. Prices for other goods and services are adjusted to cover inflation, why not sewer service?*
- *Move the utility operations out of the political realm. Put water and wastewater operations under an authority separate from the political body. They will still need to use public education to sell rate increases.*
- *Use monthly billing. This allows customers to budget more effectively. Its easier to pay a small monthly charge than a large quarterly one.*
- *Separate charges for water, sewer, trash disposal and so forth. Charges should be based on costs so the customer knows the value of each service. One utility operation should not supplement another.*

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- *All these techniques are only supplements to a good ongoing public education program.*
- *In summary, wastewater costs are going to increase. There's no way to avoid this fact.*
- *User charges are the best method for achieving financial self-sufficiency.*
- *User charges can be successfully increased by developing a comprehensive, ongoing public education campaign.*
- *When you get the utility on track, take steps to keep it there and use your public education program as needed.*
- *Let's review this topic with a video. (Play the video on "Building Support for Increasing User Fees").*

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# **SERIOUS PROBLEM**

- **HIGHER COSTS**
- **MORE REVENUE**
- **USER CHARGES**
- **PUBLIC EDUCATION**

# **INCREASE REVENUES**

- **USER CHARGES**
- **PUBLIC EDUCATION**

**HOW DO I  
CONDUCT A PUBLIC EDUCATION  
CAMPAIGN?**



- **PLAN AHEAD**
- **DECIDE ON ACTION STEPS**
- **IMPLEMENT THE PLAN**

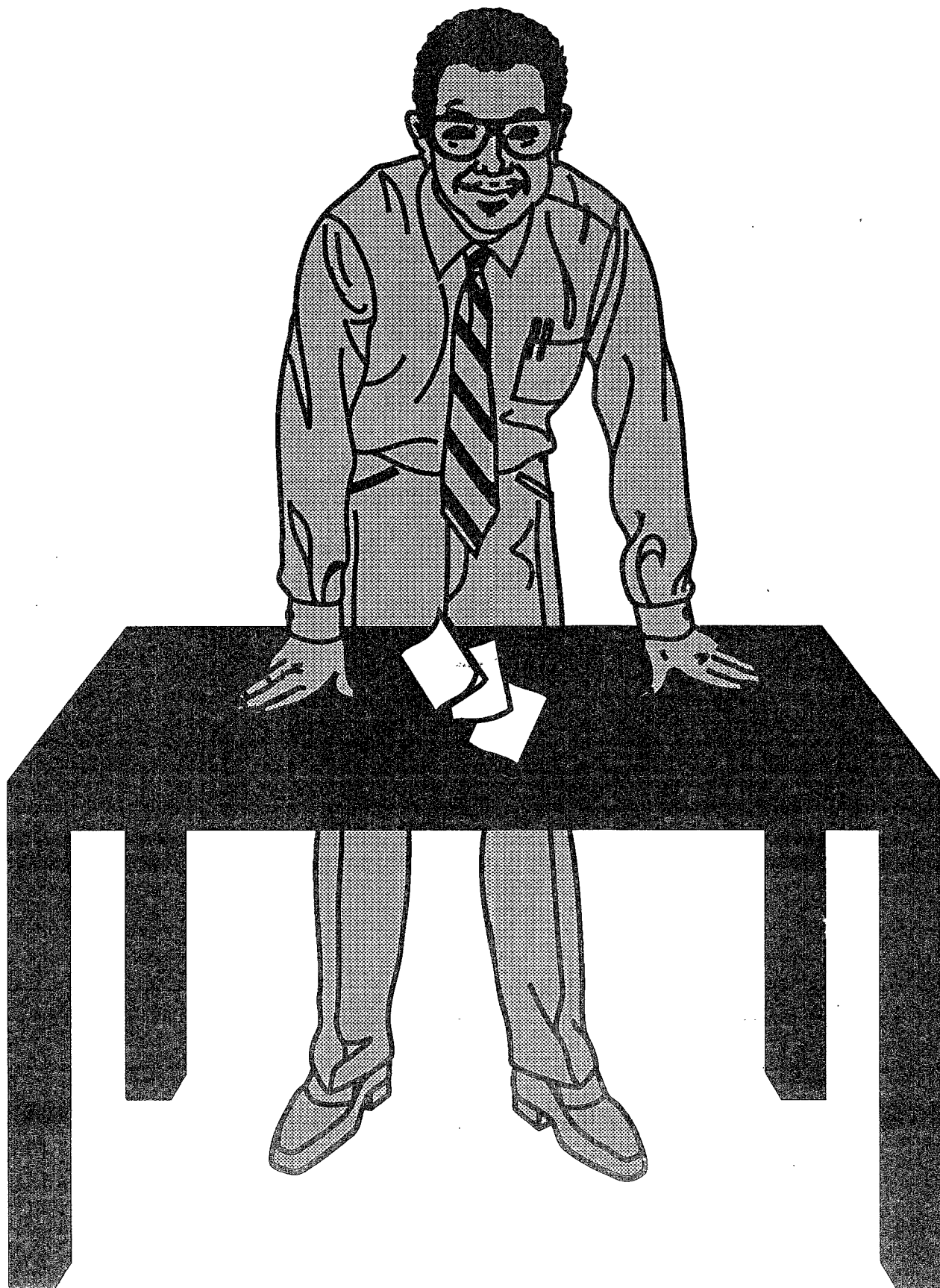
# **PROGRAM ACTIVITIES**

- **OBJECTIVES**
- **BUDGET**
- **MESSAGE - REPEAT**
- **ASSESS - ONGOING**

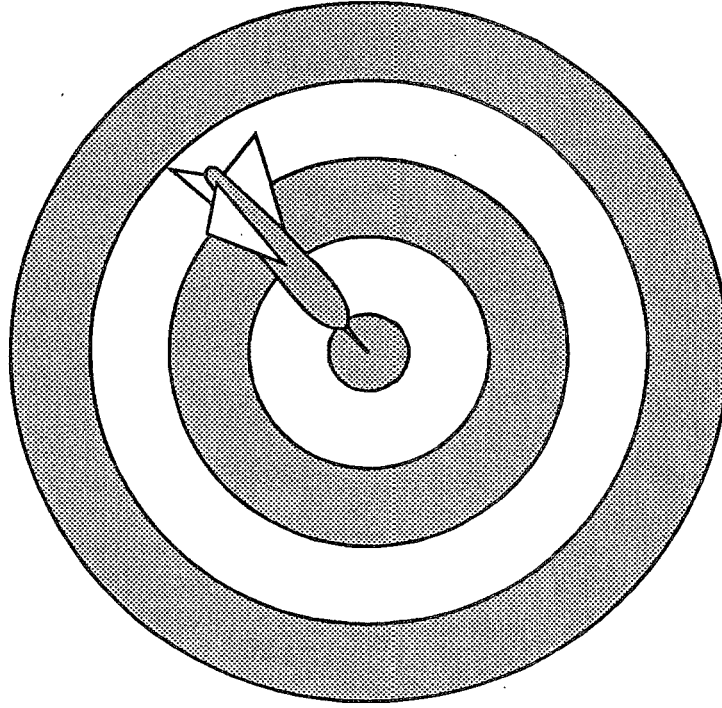




- ESTABLISH ***VALUE***
- DESCRIBE ***BENEFITS***
- GIVE ***COMPARISONS***
- EMPHASIZE ***PUBLIC HEALTH***



# TARGET



# AUDIENCES

- CO-WORKERS
- LOCAL GOVERNMENT OFFICIALS
- COMMUNITY GROUPS
- MEDIA
- YOUTH
- GENERAL PUBLIC

# **SUCCESSFUL SUPPLEMENTS**

- **ANNUAL ADJUSTMENTS**
- **SEPARATE AUTHORITY**
- **MONTHLY BILLING**

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